Pro. nat. Inst. Soc. India 10(4): 423-439.

MENON, A.G.K. (1973): Origin of the freshwater fish fauna of India. *Curr. Sci. 42(16)*: 553-556.

MENON, A.G.K. (in press): Checklist of freshwater fishes of India. Zoological Survey of India, Calcutta.

NELSON, J.S. (1994): Fishes of the World. John Wiley & Sons, Inc. 600 pp.

TALWAR, P.K. & A.G. JHINGRAN (1991): Inland Fishes, Vols. I & II, Oxford & IBH Publ. Co. Pvt. Ltd., New Delhi, India. 1097 pp.

YADAV, B.E. (1996): New record of the Percoid fish, *Pristolepis marginata* Jerdon from Krishna drainage system of Western Ghats, India. *Geobios New Reports 15(1)*: 55-56.

20. ON A REPORT OF *TETRAODON* (*MONOTRETUS*) *TRAVANCORICUS,* FROM SOUTH KANARA, KARNATAKA, INDIA

Two freshwater tetraodontid fishes have been described from India, namely *Tetraodon cutcutia* (Hamilton), found in the fresh waters of Bihar, Orissa, Bengal, and Assam, attaining a length of 9 cm and *Tetraodon* (*Monotretus*) *travancoricus* described from Pamba river, Central Travancore by Hora and Nair (1941), hardly attaining a length of 2.5 cm. After more than four decades, these miniature globe fishes were collected and reported from the coastal belts of Kerala, namely the Vembanad Lake, Kottayam by Ahlander (1998). Part of the collections made by him from Kottayam and adjacent districts of Kerala deposited in the Reserve collections of Zoological Survey of India, Southern Regional Station (ZSI, SRS), Chennai, included *T. travancoricus* from three localities, namely Meenachil river, Vembanad lake and from near Kottayam Railway Station (Rema Devi *et al.* 1996). A report on the sexual dimorphism of the species from Pudukkad, Trichur, Kerala was made by Inasu (1993). Occurrence in the Chalakudi, Periyar and Kechery rivers, Kerala was reported by Biju *et al.* (1999). Subsequently it was found further north in Karimpuzha, a tributary of Chaliyar river (north of the Palghat gap) by Lal Mohan (in press). The present record of these tiny tetraodontids far inland, from the waters of the evergreen forests of Western Ghats of South Kanara, is of ichthyological significance.

The collections were made during a survey by ZSI, SRS. The 10 specimens range in length from 10.00-18.5 mm SL, Regn No. F. 5845, from around Mavincar, Dakshin Kannada, at 50 m above msl, 13.iv.1999, coll. G. Thirumalai.

Other Material: 3 exs 14.5-20.00 mm SL, F.1364, Feb-Mar 1988, Shertallai, Kerala, V.C.R.C., Shertallai; 4 exs 15.5-19.5 mm SL, F. 5323, Karimpuzha, 22.i.1997, R.S. Lalmohan; 16 exs F.6005, 17.iv.1990, Vembanad lake, coll. Eric & Suzz.

DESCRIPTION

D.8(4) or 9(6); P.17(2) or 18(8); A.8(7) or 9(3); C 1/7(3), 8(6), 9(1)/2.

Morphometric characters are presented in Table 1. The proportions of the biometric characters of the specimens from Karnataka fall within the range given in the original description by Hora and Nair, 1941. However, though similar in position, the blotches on the body are smaller and have a restricted spread.

Remarks: Recently, a new species *Carinotetraodon imitator* was described from Cochin, Kerala by Britz and Kottelat (1999). The genus *Carinotetraodon* is distinguished from *Tetraodon,* in that the males of the former possess conspicuous mid-dorsal and mid-ventral keels on the skin during courtship, a character supposedly absent in species of *Tetraodon. C. imitator* is diagnosed by the presence of numerous, additional, tiny spots interspersed with larger blotches in females (vs. presence of only larger blotches in *Tetraodon*); body spination: a few slender pointed spines (vs. dense coverage); and differences in certain osteological

TABLE 1
MORPHOMETRICS OF *T. TRAVANCORICUS* FROM DAKSHINA KANNADA N=10

Characters	Range	Mean
Total length/Head length	3.06-3.33	3.17
Standard length/Head length	2.36-2.54	2.43
Height of head/Head width	0.93-1.12	1.03
Head length/Height of head	0.97-1.13	1.08
Length of head/Head width	1.01-1.24	1.12
Body depth/Head length	0.89-1.08	0.96
Head length/Eye diameter	2.39-2.98	2.61
Inter orbital width/Eye diameter	0.93-1.13	1.04
Total length/Body depth	3.03-3.54	3.30
Standard length/Body depth	2.32-2.70	2.52
Caudal peduncle length/ Caudal peduncle height	1.04-1.42	1.23
Total length /Caudal peduncle	3.86-4.50	4.24
Gill opening to Dorsal fin/ Head length	0.81-1.03	0.89

features. However, Britz and Kottelat (op. cit.) were not sure about the type locality, presuming it to be Cochin, based on the reports of aquarium traders. Though the new species is described as having some differences in the colour pattern (the presence of smaller spots in addition to large blotches) it remains to be seen whether this is only a colour variant. No two specimens of *T. travancoricus* studied by us showed the same colour pattern, as also mentioned by Hora and Nair (1941). From a comparative study of the colour pattern in specimens collected from various drainages along the west coast, we feel that colour is a highly variable character and cannot be relied on as a specific taxonomic feature. The meristic characters of the new species overlap with those of *T. travancoricus*, as evident from Table 2. Besides, the morphometric proportions of *C. imitator* fall within the range of *T. travancoricus*.

We feel that *C. imitator* as a species distinct from *T. travancoricus* deserves a second look, based on detailed studies of the secondary sexual characters, osteology and intraspecific colour variation within *travancoricus*.

The present study extends the range of distribution of the little known freshwater puffer fish *Tetraodon travancoricus* along a major stretch of the coastal belt of the Western Ghats, in several rivers which drain into the Arabian Sea, both above and below the Palghat Gap. It is probable that the species occurs in several other river systems, but escapes the attention of collectors due to its very small size. Further studies on the migratory habits, salinity tolerance and breeding behaviour of this euryhaline species should be carried out to ascertain the specific nature of colour pattern and spination, and to understand the origin and distribution of the species in the various habitats ranging from coastal brackish waters to the upper reaches of freshwater rivers.

TABLE 2
COMPARISON OF MERISTIC CHARACTERS OF *T. TRAVANCORICUS* FROM DIFFERENT LOCALITIES

Loc.	Pamba (Type Locality) (after Hora & Nair, 1941)	Dakshin Kannada (Present Collections)	Cochin, Kerala *C. imitator* Britz & Kottelat, 1999
D.	7-8	8-9	9-10
P.	16-17	17-18	17-19
A.	8	8-9	8-9
C.	9	10-12	11

ACKNOWLEDGEMENTS

We thank Dr. J.R.B. Alfred, Director, ZSI and Dr. P.T. Cherian, Addnl Director and OIC, S.R.S., for facilities. We also thank Dr. Thirumalai, under whose leadership the specimens were collected. Our special thanks to Dr. P.T. Cherian for critically going through the paper and for valuable suggestions.

February 2, 2000

K. REMA DEVI
T.J. INDRA
M.B. RAGHUNATHAN
Southern Regional Station,
Zoological Survey of India,
100, Santhome High Road,
Chennai 600 028, Tamil Nadu, India.

REFERENCES

AHLANDER, ERIK (1988): *Monotreta travancorica* -en rund och mycket liten fisk. *Fauna Och Flora 5*: 208-211.

BIJU. C.R., K. RAJU THOMAS & C.R. AJITHKUMAR (1999): Occurrence of *Tetraodon travancoricus* (Hora and Nair) in the Chalakudy, Periyar and Kechery rivers, Kerala. *J. Bombay nat. Hist. Soc. 96(1)*: 161.

BRITZ, R. & M. KOTTELAT (1999): *Carinotetraodon imitator,* a new freshwater puffer fish from India (Teleostei: Tetraodontiformes). *J. South. Asian Nat. Hist. 4(1)*: 39-47, 9 fig.

HORA, S.L. & K.K. NAIR (1941): Notes on the fishes in the Indian Museum XLI, New records of fresh water fish from Travancore. *Rec. Indian Mus. XLIII(3)*: 387-393.

INASU, N.D. (1993): Sexual dimorphism of a freshwater puffer fish, *Tetraodon* (*Monotretus*) *travancoricus* Hora and Nair, collected from Trichur district, Central Kerala, *J. Bombay nat. Hist. Soc. 90*: 523-524.

REMA DEVI, K., T.J. INDRA & K.J. EMILYAMMA (1996): On the fish collections from Kerala, deposited in Southern Regional Station, Zoological Survey of India by NRM Stockholm. *Rec. zool. Surv. India 95(3-4)*: 129-146.

21. FISH FAUNA OF IDUKKI AND NEYYAR WILDLIFE SANCTUARIES SOUTHERN KERALA, INDIA

Kerala state, though small, has 44 rivers, and a large number of dams have been constructed across many rivers in order to use the water for irrigation and hydroelectric projects. These dams are mostly in the forests, hence their catchment areas have to be protected. Keeping this in mind, forests around many reservoirs of dams have been constituted as wildlife sanctuaries. Such sanctuaries are intended to ensure preservation of natural conditions necessary to protect nationally significant species, biotic communities or physical features of the environment (Basha 1997).

The freshwater fish fauna studies of sanctuaries and national parks in southern Kerala have gained the attention of various researchers in the past, of which several studies were conducted in the Periyar Tiger Reserve (PTR). Raj (1941a, b) described three new fish from Periyar lake, namely *Lepidopygopsis typus, Barbus* (*Puntius*) *ophicephalus* and *Barbus* (*Puntius*) *micropogon periyarensis*. Chacko (1948) listed 35 species of fishes from Periyar lake (PTR), and according to him mahseer (*Tor khudree*) is the commonest fish in the lake. Indra and Rema Devi (1990) collected 19 species from Thekkady Wildlife Reserve (PTR). Arun *et al.* (1996) recorded six species in addition to Chacko's (1948) list. Menon and Jacob (1996) described a new Cyprinid fish *Crossocheilus periyarensis* from PTR. Zacharias *et al.* (1996) collected 35 species from PTR. Very recently, Zacharias and Minimol (1999) reported *Nemacheilus menoni* as a new species from PTR. Fish fauna studies of Chinnar Wildlife Sanctuary were carried out by Easa and Shaji (1996) and Raju Thomas *et al.* (1999a). Recently Biju *et al.* (1999) recorded 40 fish species from the Parambikulam Wildlife Sanctuary. Ichthyofaunal studies of the Eravikulam National Park were undertaken by Raju Thomas *et al.*(1999b). The present study gives information on the status and distribution of fishes in the Idukki and Neyyar Wildlife Sanctuaries.

Idukki Wildlife Sanctuary is situated in Idukki district above the Idukki arch dam (9° 45'-9° 55' N; 76° 50'-77° 05' E). The Sanctuary is drained by Periyar river and its tributary Cheruthoni river. Idukki reservoir is formed by the construction of three dams across Periyar and Cheruthoni river. Cherian (1990) studied the impact of reduction in the water flow below the Idukki dams, in the Periyar river. Detailed studies conducted by Kurup (1983) on the dead